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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,765	12/28/2000	Mitchell R. Swartz		8044

7590 07/22/2002

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EXAMINER	
PALABRICA, RICARDO J	

ART UNIT	PAPER NUMBER
3641	

DATE MAILED: 07/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/750,765	Applicant(s) SWARTZ, MITCHELL R.	
	Examin r Rick Palabrica	Art Unit 3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *11 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's election with traverse of the following species in Paper No. 7, dated 6/10/02, is acknowledged:

- Species VIII – The embodiment as shown in Fig. 18;
- Species A – Wherein the cathode is formed of a single metal only;
- Cathode – Palladium metal;
- No. of barrier layer(s) and material – One diffusion barrier of gold.

Applicant further states that claims 1-10 and 12-19 are readable on the elected species but not claims 11 and 20.

Applicant traversed the restriction requirement in Office Action dated 6/6/01 on the ground(s) that it is not be proper in view of the restriction previously given by the examiner of the parent application S/N 07/760,970. This allegation has been succinctly addressed in the Office Action dated 4/17/02.

Applicant also traversed species election requirement as being improper. Note that the basis for this requirement by the previous examiner was his determination that the species have mutually exclusive characteristics and are therefore "patentably distinct." In the 4/17/02 Office Action, said examiner indicated that the election of species requirement would be withdrawn if the applicant would state in response to said Office Action that the species are obvious variants of one another, i.e., "not patentably distinct." Since the applicant did not make such admission in Paper No. 7, the current

examiner construes that the applicant concurs with the previous examiner's determination that the species are patentably distinct.

The requirement is still deemed proper and is therefore made **FINAL**.

2. The applicant has filed the current application as a division of an earlier application, S/N 07/760,970 filed on 9/17/91. However, it does not qualify as such because it contains subject matter that was not disclosed in the earlier application (e.g. see MPEP 201.06).

Note that the earlier application states that the invention relates to "electrochemical nuclear fusion in or about metals, such as palladium, which has been electrochemically loaded with deuterium, but has relevance as well to cold nuclear fusion in pressure-loaded metals such as titanium or palladium filled with deuterium and to the broader field of nuclear fusion in or about metals, including Group IVb, Vb and some rare earths" (see page 3).

In contrast, the current application states that the invention relates to electrochemical reactions in or about metals, such as palladium, which has been electrochemically loaded with deuterium, but has relevance as well to hydrogen storage, fuel cells, nuclear fusion and other reactions, in pressure-loaded metals such as titanium or palladium filled with deuterium and to the broader field of metallurgy and engineering in or about metals, including Group IVb, Vb and some rare earths" (see page 2). (Underlining provided).

Accordingly, the current application cannot claim priority of the filing date of the earlier application because of the above differences in the subject matter covered (e.g., electrochemical nuclear fusion product for the earlier application vs. electrochemical reaction product for the current application).

Specification

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure.

The specification contains references throughout to the production of "desired reactions" with the isotopic fuel (e.g., deuterium) upon full charging of the cathode with deuterons and, the production of a change in quantity of the deuterium in the cathode..

The specification on page 3 and page 25, identifies these "desired reactions" as electrochemically-induced, nuclear fusion reactions in metals (such as deuterium-

loaded palladium). Hence the only possible "products" that can be formed in the disclosed and claimed method are nuclear fusion products (e.g., tritium), as recited on page 31, line 10. Indeed, such is even attested to by applicant's parent application S/N 07/760,970, as well as the two applications referred to on page 3 of the applicant's specification.

Additionally, the specification on page 5, lines 9 and 10, on page 19, top paragraph, and page 21, 3rd paragraph, refers to the generation of "excess heat", by the desired reactions of the isotopic fuel (e.g., deuterium) in the loaded cathode metals. Said heat energy being directed out via heat pipes and thermal bus.

This reference to production of electrochemically-induced "nuclear reactions" and "excess heat" within an electrolytic cell has become known in the art as "cold fusion."

As set forth more fully below, the disclosure does not contain reputable evidence that is sufficient to support any allegations or claims that the invention produces "nuclear reactions" or "excess heat", that any allegations or claims of the production of excess heat due to nuclear and/or chemical reactions are valid and reproducible, nor that the invention as disclosed is capable of operating as indicated and capable of providing the intended output.

This concept of producing nuclear reactions and excess heat by "cold fusion" was, in general, publicly announced by Fleischmann and Pons (hereinafter referred to as "F and P") on March 23, 1989 (see the 3/24/89 article by D. Braaten). Applicant's invention is thus, at most, no more than a variation of the cold fusion concept or system set forth by F and P.

Such is essentially attested to, for example, by applicant's statement, at the top of page 13 of the specification, that his catastrophic active medium (CAM) theory differs from the other cold fusion theories referred to on page 12 of the specification in that the nuclear fusion reactions are hypothesized to not occur within the metal bulk, but rather, at certain large vacancies and defects by the sudden fractional desaturation of deuterons.

As set forth more fully below, this "cold fusion" concept of producing nuclear reactions, including energy generation (known in the art as "excess heat"), is still no more than just an unproven concept.

Subsequent to the announcement of this cold fusion concept by F and P, many laboratories have attempted to confirm the results of F and P.

The results of these attempts at confirmation were primarily negative and even of the few initial positive results, these were generally either retracted or shown to be in error by subsequent experimenters (e.g., see the article by Stipp in the Wall Street Journal and the article by Browne in The New York Times (particularly page A22)).

The general consensus by those skilled in the art and working at these various laboratories is that the assertions by F and P were based on experimental errors (e.g., see The New York Times article by Browne, Kreysa et al., Lewis et al., Hilts, Horanyi, Ohashi et al., MisKelly et al. and Chapline).

Note for example, that Kreysa et al. on page 440 state that, "We have repeated the heat balance measurements more than 10 times and never found a significant heat excess within the accuracy limits of ±5%." Kreysa et al. also refer to various possible sources of error that could lead to erroneous conclusion that nuclear reactions and excess heat were produced.

Hilts states that the MIT experiments failed to produce any of the excess heat reported by the Utah group.

Lewis et al. state in the summary on page 525 that they found no evidence of excess enthalpy in their experiments and, they refer to various possible sources of error which could lead to the erroneous conclusion that nuclear reactions and excess heat were produced (note pages 528-530).

Both Hilts and Lewis et al. indicate that in any determination of excess heat, one must determine the total amount of energy produced (as heat and chemical energy) integrated over the whole period of cell operation, versus the total energy input.

It was also the general consensus by those skilled in the art and working at these various laboratories that there is no reputable evidence of neutron, gamma ray, tritium or helium production to support the allegation or claim that nuclear reactions are taking place, nor is there any reputable evidence to support the allegation or claim of excess heat production. See for example (in addition to the above listed references) page A14 of the 7/13/89 edition of The Washington Post, Cooke, Alber et al., Faller et al, Cribier et al., Hajdas et al., Shani et al., Ziegler et al., Price et al., Schrieder et al., and pages A3 of the 3/29/90 edition of The Washington Post.

Of particular interest is page A3 of the 3/29/90 edition of The Washington Post that refers to the negative findings of a physicist who had tested Pon's own cold fusion apparatus for nuclear output (for a more complete analysis of said "negative findings", note the article by Salamon et al.). Also of interest in this respect is the Cooke reference that, on pages 4 and 5, refers to the attempts at Harwell to obtain "cold fusion" and that Fleischmann (of F and P) had requested help from Harwell in verifying

the cold fusion claims. Said page 5 also indicates that data was collected in Frascatti-type (i.e. gaseous) experiments.

The last paragraph on said page 5 states:

"After three months of around-the-clock work at a cost of over a half million dollars, the project was terminated on June 15. This program is believed to be one of the most comprehensive worldwide with as many as 30 cells operating at a time and over 100 different experiments performed. The final results of this monumental effort in the words of the official press release was, " In none of these experiments was there any evidence of fusion taking place under electrochemical conditions". It should also be added that there was no evidence of excess heat generated by any of their cells." (Underlining added).

Applicant's specification contains assumptions and speculation as to how and in what manner, his invention will operate. However, applicant has presented no reputable factual evidence to support his assumptions and speculation regarding a reproducible, sustainable excess heat (cold fusion) and low temperature transmutation reactions.

Note in this respect that the examiner (as set forth above) has presented documentary evidence that there are no operative cold fusion systems that actually produce excess heat, neutrons, or any other nuclear reaction product.

The disclosure is thus insufficient and non-enabling as to exactly what all is necessary to actually present a reproducible, sustainable excess heat (cold fusion) and low temperature nuclear reaction, and, as to what would cause such reactions to actually take place in the applicant's system.

On page 10, lines 15+ of the specification, the applicant discloses a not shown power supply and control unit consisting of a current source and FUSOR reactor control device. However, there is neither an adequate description of the elements that constitute said power supply and control unit nor enabling disclosure of how and in what manner the elements are interconnected for the claimed invention. Also, there is neither an adequate description nor enabling disclosure of how and in what manner these elements function as one, integrated system to achieve the objectives of the claimed invention. The disclosure is also insufficient as to what exactly is "FUSOR" .

On page 11, lines 9+, an equation is given for the spatial distribution of deuterons, $D^+(z)$. However, there is neither an adequate description nor enabling disclosure of how in what manner this distribution was derived from the molecular flux, $F(D^+)$. For example,

- The disclosure is insufficient as to whether K_f is a constant or a variable. If it is a variable, disclosure is insufficient as to what exactly are the parameters that determine its value, and as to whether or not these parameters are time and/or spatially dependent.
- The disclosure is insufficient as to whether K_c is a constant or a variable. If it is a variable, disclosure is insufficient as to what exactly are the parameters that determine its value, and as to whether or not these parameters are time and/or spatially dependent.
- The disclosure is insufficient as to what exactly B is diffusivity of. Also, the disclosure is insufficient as to whether B is a constant or space and/or time-dependent.

- The disclosure is insufficient as to how and what losses, if any, are exactly accounted for in the equations (e.g., loss due to deuteron gas evolution from the bulk solution).
- The disclosure is insufficient as to what exactly are the terms A, F, L, I and K_F In the $D^+(z)$ equation.
- The disclosure is insufficient as to what exactly are the variables that are time and/or space dependent In the $F(D^+)$ equation. (The examiner assumes that there are both time and spatial dependencies in these variables since the time and space derivative operations are shown).
- The disclosure is insufficient as to what exactly are the approximations made to arrive at $D^+(z)$, in addition to the disclosed approximation of no free charge density.
- The disclosure is insufficient as to which parameters on the right hand side of the $D^+(z)$ equation are spatially dependent. Note that this equation defines the spatial distribution of the deuterons.

On page 16, lines 6+, the applicant discloses an equation for the deuterium partial pressure, P_{D2}. However, the disclosure is insufficient as to what exactly are the terms "α" and "n" .

On page 18, lines 12+, the applicant discloses an equation for the fractional saturation, y_D. However, the disclosure is insufficient as to what exactly is the term "c_1".

On page 20, lines 8+, the applicant discloses that fugacities involving hydrogenated palladium range from 5000 to 10^7 atmospheres. However, there is neither an adequate description nor enabling disclosure of how and in what manner the integrity

of the apparatus can be maintained under these pressures that the applicant refers to as "astronomic pressures." (see page 14, line 13). Also, there is neither an adequate description nor enabling disclosure of how and in what manner the reactions can be sustained (i.e., not terminated) given these astronomical pressures that are potentially disruptive or destructive.

On page 25, lines 7+, the applicant discloses a cluster of seven CAM devices that is supported and thermally coupled by epoxy. However, there is neither an adequate description nor enabling disclosure of how and in what manner epoxy can so maintain the devices in a stacked configuration (i.e., not fall apart), especially during the period when the alleged astronomical pressures are developed.

On page 27, lines 3+, of the specification, the applicant discloses that the three CAM devices are clipped to a holding board and then inserted into the fusion receptor apparatus shown in Fig. 12. There is neither an adequate description nor enabling disclosure of how and in what manner the said three devices are so held in place by clips. Also, there is neither an adequate description nor enabling disclosure of how and in what manner the said three devices can be inserted into the receptor apparatus while they are clipped to the board. The applicant also states that some clips are electrically conductive and some are insulators. The disclosure is insufficient as to which components exactly receive the conductive clips and which components get the insulator clips.

On page 32, lines 4+, the applicant discloses that the products are removed at the product barrier. However, there is neither an adequate description nor enabling disclosure of how and in what manner said products are so removed.

On page 32, 2nd paragraph, the applicant discloses a two-stage method of loading, with a first stage of loading and a second stage of sudden rapid flow of hydrogen within the metal. However, there is neither an adequate description nor enabling disclosure of how and in what manner said method of loading is done. Also, the disclosure is insufficient as to what exactly is meant by the term "sudden rapid ("catastrophic") flow of hydrogen" and how does one determine whether such sudden rapid flow has been achieved.

Applicant's claimed method of low temperature electrolytic nuclear reactions is practiced on an apparatus of non-cold fusion art (e.g. Westfall [U.S. 5,215,631] or Kinsella et al. [U.S. 3,682,806] or Patterson [U.S. 5,318,675] - hereinafter referred to as Patterson -1, or Patterson [U.S. 5,372,688] - hereinafter referred to as Patterson-2) that is identical to the applicant's, and, these apparatuses are all operated in an identical manner, i.e., as an electrolytic cell. Even more importantly, note that Lewis et al. searched for low temperature nuclear fusion in a system and manner of operation identical to that recited in applicant's claims (note the reference to oscillating current pulses and abrupt current steps in the second column of page 525), but with negative results!

Note that it is well-settled case law that identical apparatuses operated in the same manner, must produce identical results.

There is accordingly, neither an adequate description nor enabling disclosure of how and in what manner, applicant's invention is able to produce low temperature electrolytic nuclear reactions and excess heat whereas, the identical systems and

methods of operation in any one of Lewis et al., Westfall or Kinsella et al., or Patterson-1 or Patterson-2, presumably did not produce said low temperature electrolytic nuclear reactions and excess heat.

Assuming for the sake of argument that applicant's invention does function in a different manner to produce a different result from that of any one of Lewis et al., Westfall or Kinsella et al., it can only be because applicant's invention actually contains some additional critical feature(s), component(s), etc., not found in any of said references which is necessary to enable applicant's invention to function differently from any of said references so as to be able to produce a different result.

Accordingly, the disclosure is insufficient in failing to disclose said additional critical feature(s), component(s), etc., necessary to cause applicant's invention to operatively function in a different manner to produce a result different from that of said references.

There is neither an adequate description nor enabling disclosure of how and in what manner, one can control the loading of isotopic fuel into a material merely by: a) supplying said isotopic fuel to said material; b) providing means for loading said isotopic fuel into said material to saturate said material; and c) providing means for producing a change in the active quantity of said isotopic fuel within said material (e.g., see claim 1).

There is neither an adequate description nor enabling disclosure of how and in what manner, one can control the two-stage loading of isotopic fuel into a material merely by: a) supplying said isotopic fuel to said material; b) providing means for loading said isotopic fuel into said material to saturate said material; and c) providing

means for producing a change in the active quantity of said isotopic fuel within said material (e.g., see claim 4).

There is neither an adequate description nor enabling disclosure of how and in what manner, one can produce a product using a material loaded with isotopic fuel by an apparatus that merely includes: a) means to supply said isotopic fuel to said material; b) means to load said isotopic fuel into said material to saturate said material; c) means to produce a change in the active quantity of said isotopic fuel within said material; d) means thereby to produce catastrophic diffusion flux of said isotopic fuel within said material (e.g., see claim 13).

Clearly, when an artisan or experimenter is relying on the experimental results of particular tests or experiments to establish certain facts, i.e., the production of excess heat and of low temperature nuclear reactions, it is incumbent upon the experimenter to show that the alleged experimental results of excess heat and low temperature nuclear reactions, are valid and not just the results of experimental errors or misinterpretations of experimental data (and that the alleged experimental results do not fall within the limits of experimental errors).

There is thus no reputable evidence of record to support the assumption and speculation that the invention would actually operate as indicated and produce the desired results as indicated.

It is not seen wherein the specification discloses any particular structure, etc., which is unique to the applicant's system and which would make the applicant's cold fusion system operative whereas the systems disclosed in the above referenced "numerous teachings by skilled artisans," were not operative.

There is neither an adequate description not enabling disclosure of the parameters of a specific operative embodiment of the invention, including atomic or weight ratio of metal electrodes to electrolyte (e.g. palladium to gel), dimensional ratio of electrodes to their spacing (i.e., sizes of anode and cathode relative to the space between them), voltage and current requirements to produce the orthogonal electric fields and the magnetic field, surface area-to-volume requirement for the reactor, minimum concentration of the isotopic fuel in the cathode necessary for the desired reactions to take place, the exact composition (including impurities and amounts thereof) of the electrolyte and of the cathode and of the anode, etc. These impurities can have an adverse effect on the desired operation of the invention.

It is apparent from the specification that applicants' concept or theory involves a "cold fusion" system based on the "cold fusion" systems that came about from the work of F and P, is workable or operative, only if these systems are already operative.

However, as set forth above, the examiner has presented evidence showing that in such cold fusion systems, the claims of excess heat (as well as of other nuclear reaction products), are not reproducible or even obtainable. It consequently must follow that the claims of excess heat or nuclear reactions are not reproducible of even obtainable with applicant's invention. While applicant may have set forth theoretical concepts, it is well known in the cold fusion field that theory and reality have a habit of not coinciding. There is no evidence to indicate that the applicant has so succeeded where others have failed, in arriving at an operative cold fusion system, i.e. that he has progressed his system beyond the point of an unproven theory or concept which still requires an undue amount of experimentation to enable the artisan to make and use the

inventive system for its indicated purpose. This view is also considered supported by the failure to set forth a full example of the specific parameters of an operative embodiment. One cannot rely on the skill in the art for the selection of the proper quantitative values to present an operative cold fusion system, since those in the art do not know what would be these values. See *Bank v. Rauland Corp.*, 64 U.S.P.Q. 93; *In re Corneil et al.*, 145 U.S.P.Q. 697.

To reiterate briefly, the examiner has presented evidence, that neither the situation of excess "heat" nor of other, nuclear reaction products, can reasonably be expected to be reproducible or even obtainable with the present invention.

There is no reputable evidence of record that would overcome the experimental showings in the above listed references, disproving this concept of "cold fusion".

Again, there is no evidence to indicate that the applicant has so succeeded where others have failed, in arriving at an operative system that produces nuclear fusion or even "excess heat", i.e., that he has progressed his system beyond the point of an unproven theory of concept which still requires an undue amount of experimentation to enable the artisan to make and use the invention for its indicated purpose.

It is thus considered that the examiner (for the reasons set forth above) has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the applicant itself to inform, not to direct others to find out for themselves; *In re Gardner et al.*, 166 U.S.P.Q. 138, *In re Scarborough*, 182 U.S.P.Q. 298. Note that the disclosure must enable a person skilled in the art to practice the invention without having to design structure not shown to be readily available in the art; *In re Hirsch*, 131 U.S.P.Q. 198.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-10 and 12-19 are rejected under 35 U.S.C. 101 because the claimed invention as disclosed is inoperative and therefore lacks utility.

The reasons that the inventions as disclosed is inoperative are the same as the reasons set forth in section 4 above as to why the specification is objected to and the reasons set forth in section 4 above are accordingly incorporated herein.

There is no reputable evidence of record to indicate the invention has been reduced to the point of providing in current available form, an operative cold fusion system. The invention is not considered as meeting the requirements of 35 U.S.C. 101 as being "useful". Note in this respect, Page A14 of the 7/13/89 edition of The Washington Post which indicates that there is no convincing evidence that the "phenomena attributed to cold fusion would produce useful sources of energy".

The applicant at best, has set forth what may be considered a concept or an object of scientific research. However, it has been held that such does not present a utility within the meaning of 35 U.S.C. 101. See *Brenner v. Manson*, 148 U.S.P.Q. 689.

Additionally, it is well established that whereas here, the utility of the claimed invention is based upon allegations that border on the incredible or allegations that

would not be readily accepted by a substantial portion of the scientific community, sufficient substantiating evidence of operability must be submitted by applicant. Note *In re Houghton*, 167 U.S.P.Q. 687 (CCPA 1970); *In re Ferens*, 163 U.S.P.Q. 609 (CCPA 1969); *Puharich v. Brenner*, 162 U.S.P.Q. 136 (CA DC 1969); *In re Pottier*, 152 U.S.P.Q. 407 (CCPA 1967); *In re Ruskin*, 148 U.S.P.Q. 221 (CCPA 1966); *In re Citron*, 139 U.S.P.Q. 516 (CCPA 1963); and *In re Novak*, 134 U.S.P.Q. 335 (CCPA 1962).

Claim Rejections - 35 USC § 112

6. Claims 1-10 and 12-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The reasons that the inventions as disclosed are not enabling are the same as the reasons set forth in section 4 above as to why the specification is objected to and the reasons set forth in section 4 above are accordingly incorporated herein.

7. Claims 1-10 and 12-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete.

The preambles of method claims 1-10 and 12, and apparatus claims 13-19 disclose a process and apparatus, respectively, for producing a product using a material which is loaded with an isotopic fuel. This implies that the process/apparatus is applied to a material that already contains isotopic fuel. However, the body of the claims disclose supplying and loading said isotopic fuel into the material. These claims are vague, indefinite and incomplete as to whether the process/apparatus supplies and loads additional isotopic fuel to the material that already contains isotopic fuel, i.e., do the claims imply multiple loading of fuel?

The preambles of method claims 1-10 and 12 are directed to a process for producing a product and for controlling the loading of isotopic fuel into a material, and the preambles of claims 13-19 are directed to an apparatus for producing a product, however, the bodies of the independent claims fail to recite a specific step of producing said product, as well as a specific step of controlling said product, and, the claims are hence vague, indefinite and incomplete. See also MPEP 2172.01.

The claims are also vague, indefinite and incomplete as to what is actually the product.

As indicated in sections 8, 9 and 10 below, any one of Westfall, or Kinsella et al, or Patterson-1, or Patterson-2, illustrate(s) an electrolytic process that is identical to that recited in said applicant's claims. Applicant's disclosure indicates that his process results in the generation of excess heat energy because his apparatus is claimed to have a thermal bus connected to heat pipes (e.g. see top paragraph on page 29).

This implies that the thermal bus-heat pipe combination extracts heat generated by the applicant's apparatus. Neither one of Westfall, Kinsella et al, Patterson-1, or Patterson-2 specifically disclose the generation of low temperature nuclear reactions and the generation of sufficient heat energy such as to require removal thereof. Assuming for the sake of argument that either one of Westfall's or Kinsella et al.'s system is not capable of producing such nuclear reactions and heat energy, applicant's claims are incomplete in failing to recite the additional critical structure and/or method steps (not found in any one of Westfall, Kinsella et al., or Patterson-1, or Patterson-2, or Patterson-3.) that are actually necessary to produce applicant's indicated heat energy and nuclear reactions.

Claims 1-10 and 12-19 recite the limitation, "loading said isotopic fuel into said material to saturate said material" (underlining added). The claims are vague, indefinite and incomplete because a criterion for determining that saturation has been achieved is not specified (e.g., required minimum time for the loading step or required minimum quantity of fuel to be loaded).

Claims 1-10 and 12-19 recite the limitation "the active quantity" in line 7 of claim 1, in lines 7 and 8 of claim 4, in line 2 of claim 8, in line 6 of claim 13, and in line 2 of claim 19. There is insufficient antecedent basis for this limitation in the claim.

Claims 3, 6 recite the limitation "said second material" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7, 10, and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Westfall (U.S. 5,215,631).

Westfall discloses a process and an apparatus for growing crystals by electrodeposition. He teaches that his invention has use in growing palladium, titanium and other metal crystals for "cold fusion" electrodes (e.g., see column 1, lines 36+, column 2, lines 37+, and column 3, lines 32+). His method uses the electrolytic apparatus shown in Fig. 1 comprising a bath (4) between a working electrode 8 (where the crystal growth occurs) and a counter electrode (which replenishes the electrolytic solution's concentration of ions of the to-be-deposited material. The bath is used by passing current between the working and counter electrodes (e.g. see column 4, lines 25+). Westfall further discloses that palladium can be deposited from the more common aqueous systems (see column 7, lines 25+). Table 1 lists metals that can be grown from an aqueous solution, including palladium, and the more common anion and cation

components. He teaches that hydrogen is generated in an aqueous system (e.g. see column 9, lines 32+).

Westfall further discloses the use of orthogonal electric fields as part of the nucleation manipulation techniques for crystal growth control. He states that orthogonal electric fields are generated by the use of "conformal" counter electrodes with configurations such as wire-tubular, sphere-spherical, cube-cubical torus-toroidal, etc. (see column 24, lines 11+).

Westfall also discloses conformal electric fields may be used in combination with one or more nucleation manipulation techniques, such as magnetic fields (se column 24, lines 55+).

Note that applicant's claimed "isotopic fuel" reads on the hydrogen generated by Westfall's aqueous solution and his "material" reads on Westfall's "working electrode."

Note also that the method claims are directed to "means for loading the isotopic fuel into a material" and the apparatus claims to "means to load the isotopic fuel into a material" and, not to the loading of the fuel into the material." Therefore, the claim recitations as to: a) "loading the isotopic fuel to saturate the material"; and b) "creating thereby a catastrophic diffusion flux of said isotopic fuel within said material" are not limiting.

Notwithstanding the above non-limiting clauses in the claims, Westfall also discloses that the orthogonal fields, which result from a conformal counter electrode configuration, provide control of nucleation (see column 24, lines 1+). He further

discloses that nucleation controls growth of crystals (e.g., see column 5, lines 1+). Conformal electric fields result in near uniform intensities and near uniform ion diffusion distances promoting superior deposition system stability. Maximum saturation is maintained by the use of a (working electrode surface area)/(counter electrode surface area less than unity (e.g., see column 24, lines 30+).

Clearly, the first electric field must first effect movement of ions from the electrolytic bath towards the working electrode before the orthogonal electric field can effect control of distribution of these ions to form the desired crystal growth. Therefore, the first electric field and its effect reads on applicant's "loading of isotopic fuel into material." Note from above that by making the ratio of the working electrode surface area to the counter electrode surface area less than one, maximum saturation is maintained, and having such ratio reads on the claim language "loading isotopic fuel to saturate material."

Note also that since the Westfall's process and apparatus read on applicant's process and apparatus claims, the same can be said regarding applicant's claim language of "creating a catastrophic diffusion flux of said isotopic fuel in said material."

Note further that West fall's aqueous solution contains ordinary water, which, in turn, has 0.016% heavy water content (see Etherington, Nuclear Engineering Handbook, p 8-27). This reads on the claim language regarding having deuterium in the isotopic fuel. Westfall inherently also has a means to remove the product, i.e., formed crystal. Again, applicant's claim language reads on such.

9. Claims 1-8, and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Patterson (U.S. 5,318,675) [herinafter referred to as Patterson-1]), or Patterson (U.S. 5,372,688) [herinafter referred to as Patterson-2. Either one of Patterson-1 or Patterson-2 discloses in Fig. 2 an electrolytic cell (12) filled with a liquid electrolyte (59) of heavy water, and having electrodes 15 and 16. A plurality of conductive microspheres (36) having a uniform outer palladium coating are positioned within the housing (14). See, for example, Patterson-1, column 3, lines 54+ and column 4, lines 21+. The cell is exercised by a first stage (see Figs. 1 and 2) , which Patterson-1 refers to as a "loading stage" during which a relatively low level current (0.05 amps) is introduced across the electrodes 15 and 16.

During the initial loading, the palladium surface of the microspheres (36) fully absorbs and combines with the hydrogen isotope, i.e., it becomes loaded. This loading takes about two hours under a current flow through the cell of about 0.05 amps (e.g., see column 6, lines 6+).

Following the loading stage, the current level between electrodes 15 and 16 is then incrementally increased. During this time, the temperature of the electrolyte is both monitored and controlled by increasing the flow rate of electrolyte (59) therethrough (see column 6, lines 1+). Note that applicant's claim language of "producing a change in the active quantity of isotopic fuel in material by a change in temperature of the material" reads on either Patterson-1's or Patterson-2's process of "controlling the electrolyte temperature by changing the flow rate." Note that the palladium-coated

microspheres are immersed in the electrolyte and any change in the electrolyte temperature inherently changes the temperature of the material.

Note also that the method claims are directed to "means for loading the isotopic fuel into a material" and the apparatus claims to "means to load the isotopic fuel into a material" and, not to the loading of the fuel into the material." Therefore, the claim recitations as to: a) "loading the isotopic fuel to saturate the material"; and b) "creating thereby a catastrophic diffusion flux of said isotopic fuel within said material" are not limiting.

Not withstanding the above non-limiting clauses of the claims, note that since the Patterson-1 or Patterson-2 process and apparatus read on applicant's process and apparatus claims, the same can be said regarding applicant's claim language of "creating a catastrophic diffusion flux of said isotopic fuel within said material."

10. Claims 1, 2, 4, 5, 7, 10, 13, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinsella et al.(U.S. 3,682,806). Kinsella et al. disclose a process for electroplating metallic articles with carboxylic film-forming materials utilizing lithium hydroxide as solubilizer (see Fig. 1 and column 8, 2nd paragraph). Fig. 1 shows the anode (4), which is the material to be coated, a stainless steel cathode (6). An alternative embodiment can have an auxiliary platinum anode (7) and an auxiliary stainless steel cathode (8). The "electrodeposition current" flows from the anode (4) to the stainless steel cathode (6). An auxiliary direct current (referred to as "regeneration

current") is applied between the auxiliary electrodes, the direction of the current being orthogonal to the direction of the electrodeposition current (see column 9, lines 65+).

Note that applicant's "isotopic fuel" in the claim language reads on Kinsella et al.'s lithium anions that form on the anode, "material" reads on "anode", "loading of isotopic fuel into material" reads on the "electrodeposition current" and its effect. "change in the active quantity of isotopic fuel within material" reads on the "regeneration current" and its effect.

Note also that the method claims are directed to "means for loading the isotopic fuel into a material" and the apparatus claims to "means to load the isotopic fuel into a material" and, not to the loading of the fuel into the material." Therefore, the claim recitations as to: a) "loading the isotopic fuel to saturate the material"; and b) "creating thereby a catastrophic diffusion flux of said isotopic fuel within said material" are not limiting.

11. Claims 1-9 and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Furuya (JP 6-148366). Furuya discloses a method of absorbing (i.e., "loading) deuterium and sealing it off into a metal that can absorb deuterium, and then using said metal to activate a cold nuclear fusion reaction (see Figs. 1 and 2, and page 4, 2nd paragraph of English language translation). The deuterium-absorbing metal is used a negative electrode can be a palladium alloy. A barrier layer that deuterium will not

penetrate is formed on the surface of the negative electrode (e.g., see page 5, paragraph 0005).

Furuya discloses in Fig. 1 a negative electrode of palladium sheet (2) that is submerged in an electrolyte (1) containing heavy water (see page 7+ of the English language translation). A positive electrode of platinum wire (4) is wound around the palladium sheet. Deuterium is then absorbed ("loaded') into the palladium by applying a voltage between the electrodes. Hg ions are then added to the electrolyte and a barrier to prevent escape of the loaded deuterium is created on the surface of the palladium sheet by electrolytic plating. Furuya discloses that other barrier layers, including Au, Ag, Cu, Sn, In and Zn can be used.

Furuya then discloses in Fig. 2 the use of the said deuterium-loaded palladium sheet with a barrier surface in purportedly producing cold nuclear fusion. The palladium sheet (2) is placed between ceramic packing (7). While pressure is applied between two copper jigs (8 and 8'), cold water is allowed to flow into the opening in the first copper jig (8) to cool the material. The other jig (8') is heated with a heater (10). A localized concentration of deuterium atoms is created when a temperature differential is developed across the palladium sheet (2). Cold nuclear fusion is claimed and excessive heat is purportedly observable (e.g., see paragraph 009 on pages 8 and 9).

Note in also Fig. 2 that the palladium sheet (2) shows at least two sides that must be plated with barrier layers to seal the loaded deuterium within the sheet. This

arrangement reads on the claim language ""diffusion barriers are multiple and are arranged as alternating layers of diffusion barriers."

Note also that the method claims are directed to "means for loading the isotopic fuel into a material" and the apparatus claims to "means to load the isotopic fuel into a material" and, not to the loading of the fuel into the material." Therefore, the claim recitations as to: a) "loading the isotopic fuel to saturate the material"; and b) "creating thereby a catastrophic diffusion flux of said isotopic fuel within said material" are not limiting.

12. Claims 1-7 and 13-16 rejected under 35 U.S.C. 102(b) as being anticipated by either one of Swartz (Fusion Technology, Vol. 22, Sept. 1992, pages 296-300) [herinafter referred to as Swartz-1], or Swartz (Transactions of Fusion Technology, Vol. 26, Dec. 1994, pages 74-77) [hereinafter referred to as Swartz –2], or Swartz (Cold Fusion Source Book, International Symposium on Cold Fusion and Advanced Energy Sources, Belarusian State University, Minsk, Belarus, May 25-26, 1994) [hereinafter referred to as Swartz-3]. Either one of the above references discloses electrochemical loading of deuterium into a palladium metal cathode using an electric field. Fig. 1 in either one of these references shows four regions of the electrochemical fusion cell. The first region is the anode. The second region is the solution of heavy water. The third region is the double layer between the solution and the cathode, which is created partly

by the cathode fall of ions and other polarization reactions. The last compartment is the gas volume outside the material.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya, as applied to claims 1-9 and 13-19 above, and further in view of either one of Lasche (U.S. 4,735,762) or Wooley (U.S. 5,991,351). Furuya discloses the applicant's claims except for the removal of the product and the use of magnetic fields for said removal.

Either one of Lasche or Wooley disclose the use of a magnetic field for producing electric energy directly from a nuclear fusion device, involving the action of said field on the charge particle product of fusion. One having ordinary skill in the art would have recognized that the fusion apparatus of Furuya produces the same charged particle products as those produced by either one of Lasche or Wooley, and the use of a magnetic field to remove the fusion products in Furuya's would have been prima facie obvious.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Furuya, by the teaching of either on of Lasche or Wooley, in order to gain the advantages thereof (i.e., the ability to generate electrical power), as this is no more than the application of well-known techniques in the nuclear fusion art.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References G and N-Q further illustrate prior art.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 703-306-5756. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, telephone number is 703-308-1113.

RJP
July 10, 2002

SUPERVISORY PATENT EXAMINER